DOCUMENT RESUME

ED 320 315 EC 231 122

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TITLE Problem-Solving and Information Processing: A Framework for Understanding Behavioral Disorders.
PUB DATE 90
NOTE 30p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Basic Skills; *Behavior Disorders; Cognitive Processes; Elementary Secondary Education; Generalization; *Interpersonal Competence; *Intervention; *Models; *Problem Solving; *Student Evaluation; Theories
IDENTIFIERS Hypothesis Testing Model; Information Processing Model

ABSTRACT

This paper presents the Hypothesis Testing Theory/Model and the Information Processing Model developed by M. Parrill-Bernstein in relation to the field of behavior disorders. The models provide a framework for (1) studying both problem solving skills and social behavior and (2) developing intervention programs for behavior disordered adolescents. The hypothesis testing theory is discussed in terms of problem solving steps and the impact of ineffective problem solving on both academic and social skills. The components of the Information Processing Model described include attention, concept organization, memory, language, and cognitive mapping, all of which contribute to a final component, social cognition. Social cognition, in turn, is reflected in the observable behavior referred to as social competence, which includes the skills of role taking, person perception, and perspective taking, all three of which are necessary for successful social adjustment. Implications of the two models for assessment and intervention are discussed in detail. Intervention programs would be based upon assessment of each of the problem solving focusing on skill remediation and generalization of newly acquired social skills to new environments. Contains 40 references. (DB)

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Problem-Solving and Information Processing: A Framework for Understanding Behavioral Disorders

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Running head: Information Processing

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ABSTRACT

Various models of exceptionality have been used in the study and treatment of behavioral disorders. Information processing models, which are currently receiving renewed attention in the field of learning disabilities, may also offer assistance to those working with behaviorally disordered children and adolescents. This article presents Parrill-Bernstein's models for problem solving and information processing and a rationale for their consideration by those in the field of behavioral disorders. Implications for assessment and treatment are explored.

Problem-Solving and Information Processing: A Framework for Understanding Behavioral Disorders

Suprisingly little is known about academic, intellectual, and behavioral characteristics of students identified as experiencing social-emotional difficulties (Kauffman, Cullinan, & Epstein, 1987). Although there is controversy about definitions and terminology used to identify this population, students are, nevertheless, labeled emotionally disturbed or behaviorally disordered. In the midst of this disagreement about characteristics and definitions, professionals working with students with behavioral disorders frequently refer to various models of exceptionality to study, understand, and treat this population. The Conceptual Project in Emotional Disturbance (Rhodes & Tracy, 1974) represents a major effort to identify and organize the models of variance or exceptionality and to explore their implications for interventions and applications to service delivery systems. The six schools of thought identified by this project include Biophysical Theory, Ecological Theory, Learning Theory, Psychodynamic Theory, Social Labeling Theory, and Counter Theory. In 1979, Kauffman presented another conceptualization of exceptionality, based upon Social Learning Theory, to facilitate the understanding of behavioral disorders and explored the

implications of the model for assessment, classification, and intervention. During the past decades, the Psychoeducational Model has evolved and has been identified as being of particular significance to educators of students with behavioral disorders (McDowell, Adamson, & Wood, 1982). Developmental Therapy (Wood, 1986) is based upon still another conceptual model of exceptionality, a developmental model.

For educators, the merit of each model is determined by its ability to provide 1) an understanding of behavior and 2) direction for developing assessment, intervention, and/or remediation strategies. Although numerous behavioral disordered students have benefited from programs based upon the models previously identified here, others have not. Problems such as transfer and generalization continue to plague many intervention programs designed to teach/promote social skills (Shores, 1987). Additional, new, or refined models could help identify individual characteristics of importance and improve current programming for this population. One such theoretical model that could provide insight into the social and behavioral problems of some students is Parrill-Burnstein's (1981) Information Processing Model.

Currently in the field of learning disabilities Information Processing is receiving renewed attention (Swanson, 1987a; Swanson, 1987b). Numerous researchers, including LaBerge and Samuels (1974), Swanson (1982), Parrill-Bernstein (1981) and Sternberg (1985) have developed differing paradigms of Information Processing Theory for study with the hope of improving our understanding of learning disabilities and thus enhance programming efforts. While much of the research on learning disabilities and information proscessing has focused on academic behavior (Gerber & Hall, 1987; Pellegrino & Goldman, 1987; Samuels, 1987), there are also implications for social behavior.

In spite of controvery over definitions and characteristics of behavioral disorders, some generalizations can be made, for example, in the realm of social behavior. Students identified as behaviorally disordered have difficulty establishing or maintaining positive social relationships (Fox & Saville, 1987). Professionals who serve behaviorally disordered children and adolescents generally agree that this population may be characterized by the quantity and quality of their non-productive, inappropriate social interactions (Simpson, 1987). One method for developing social interaction skills of behaviorally disordered youth that holds promise is the

interpersonal problem-solving approach (McEvoy & Odom, 1987).

The problem solving and information processing models presented by Parril-Bernstein (1981) provide a framework for 1) studying both problem-solving skills and social behavior and 2) developing intervention programs for adolescents with behavior disorders. The Parrill-Bernstein models are the focus of this article because they specifically address social cognition and problem-solving skills, both important in the field of behavioral disorders.

In the following pages, an overview of Parrill-Bernstein's Hypothesis Testing Theory/Model and Information Processing Model (1981) will be presented and their relevance and application to the field of behavior disorders explored. There is no intention to suggest a new definition for behavioral disorders, only to present another conceptual model of exceptionality that could enhance our understanding of the needs of students with behavioral disorders.

The Information Processing Model

The Parrill-Burnstein models are organized into two primary components-- problem solving skills and information processing skills. The skills associated with each component are presented in Figure 1. The two pyramids, one upon the other, are intended to imply a

hierarchial sequence, but there is also a simultaneous reciprocity among the processes.

INSERT FIGURE 1 ABOUT HERE

The lower pyramid includes the problem-solving skills of Hypothesis Testing Theory (Parrill-Burnstein, 1978), while the upper pyramid includes the information processing skills identified in Parrill-Burnstein's Information Processing Model (1981). Both sets of skills/processes will be discussed. However, first the relevance of problem-solving skills to behavioral disorders will be addressed.

Behavioral Disorders and Problem-solving Skills

Frequently students served in programs for the behaviorally disordered are associated with poor social skills (Kauffman, 1985; Kneedler, 1980), and those with deficient social skills may also exhibit more problem-solving difficulties than their peers (McEvoy & Odom, 1987; Spivack, Platt, & Shure, 1974). Therefore, it is not surprising that students identified as behaviorally disordered have been found to be less capable than their peers in defining their problems, attending to relevant stimuli contributing to the problem, generating responses to the problem, and evaluating their responses (Spivack & Shure, 1974). Much of the

research on problem-solving skills suggests that behaviorally disordered students have difficulty producing one or more possible solutions to problems and that this skill, the generation of multiple responses, is a necessary ingrediant for the successful resolution of problems (Johnston, Simon, & Zemitzsch, 1983).

Effective problem-solving skills have a positive impact on both academic and social skills (Parrill-Burnstein, 1981). In school, students' acquisition of academic skills and performance on academic tasks can depend upon the adequacy of their problem-solving skills. In the arena of social behavior, social competency among peers is also dependent upon efficient problem-solving skills (Higgins & Thies, 1981; McEvoy & Odom, 1987). While inadequate problem-solving skills create difficulties for some students (Parrill-Burnstein, 1981), for others the failure to actively or effectively apply their problem-solving skills results in problems and failures (Bryan & Bryan, 1986; Gerber, 1983). Clearly many students with social and emotional problems need to develop, improve, and/or become aware of their problem-solving abilities. Interpersonal social problem-solving research with handicapped students appears to be promising (McEvoy & Odom, 1987), and tentative evidence for its successful use with

students with behavioral disorders exits (Koenings & Oppenheimer, 1985). Based upon research to date, it appears that teaching problem-solving skills to many behaviorally disordered students warrants consideration.

Hypothesis Testing Theory and Problem-Solving Skills

What do we do when we solve problems? Are all problems solved in the same manner? Are there identifiable steps involved? Opinions differ as to what is involved in problem-solving, and many programs for training problem-solving skills have been developed (Frederikson, 1984). Nevertheless, there are several components that are considered to be common to most views and programs. These include defining the problem, identifying the goal, delaying an impulsive response, generating responses, evaluating the possible consequences of the responses, executing the better/best response, and using feedback to evaluate and/or modify, the initial response (Gaston, Flores-de-Apodaca, Rains, Weissburg, & Cowen, 1978).

Hypotheses Testing Theory (Parrill-Bernstein, 1981) provides a similar and sequential problem-solving analysis:

1. Stimuls Differentiation-- Which stimuli are relvant or not relevant to the problem?
2. Selective Attention-- Focus on the relevant

stimuli.

3. Response Generation-- Develop one or more solutions to the problem.
4. Response Execution-- Apply the solution of choice.
5. Response to Feedback-- Evaluate and modify the solution if required.

Stop for a moment and reflect upon a difficult situation or problem encountered recently. More than likely, components of the problem-solving analyses presented here formed the basis for decision making. Although adherence to these problem-solving paradigms does not guarantee a successful solution or outcome to all problems, imagine functioning without them. Many students apparently have to function without them and, as a result, exhibit problems in both academic and social behavior. For these students, assistance in developing problem-solving skills is imperative.

Problem-solving deficits alone do not adequately explain the etiology of many incidences of behavior disorders. However, if we look at problem-solving within the context of information processing deficits we have a more complete and useful model for explaining behavior disorders as exhibited by many students today.

Information Processing Skills

During the last decade, various Information Processing Theories have been used as a framework for examining the deficits of students with learning disabilities (Parrill-Burnstein, 1981; Sternberg, 1985; Swanson, 1982; Swanson, 1987a). In the model created by Parrill-Bernstein (1981), ineffective problem-solving skills are thought to be an important contributor to information processing deficits which, in turn, are the source of social and academic difficulties experienced by many children and adolescents. Development of information processing skills is dependent upon adequate problem-solving skills. Information processing involves attention, concept organization, memory, language, cognitive mapping and social cognition skills (Parril-Burnstein, 1981) (see Figure 1).

For many students with behavioral problems, problem-solving deficits may or may not be the culprit. Just as Parrill-Burnstein has suggested for learning disabled students, many behaviorally disordered students might be experiencing difficulties as a result of information processing deficits. Although her information processing model includes attention, concept organization, memory, language, cognitive mapping, and social cognition, it is the latter, social

cognition, that is most relevant to this discussion. However, since Parrill-Burnstein's model is hierarchial, the information processing skills that contribute to effective social cognition will be identified first. This discussion refers to research with learning disabled students; however, consider the possibility that the same might be applicable to those with behavioral disorders.

Attention-- Attention is part of three ongoing processess: attention and perception, attention and memory, and attention and cognition. When attention was studied as part of these processes, learning disabled students were found to have problems in selective attention, including arousal, impulse control, stimulus selection, focusing and concentration (Parrill-Burnstein, 1981). In these problem areas, problem-solving skills are required to decide what strength stimulus to respond to, when to control one's responses, which stimuli to repond to, how to focus and concentrate on stimuli, and ultimately how to monitor and evaluate these efforts.

Concept Organization-- Developing concepts is an activity that requires problem-solving skills and attention skills. Concept organization is critical for successful performance in academic and social situations. Helping students develop/organize concepts

forms the basis of the academic curriculum, i.e. the concepts of additon, subtraction, democracy, community, pronouns, verbs, mechanical advantage, atomic structures, etc. For example, when learning geometric shapes, one is continually identifying which variables (i.e. number of sides, size of figure, size of angle) are relevant to defining a particular shape, attending to those variables, forming and testing out the hypothesis about important variables (i.e. identifying specific shapes for the teacher, and then modifying the concept if the teacher does not reinforce one's identification of the shapes). To be a successful participant in the social life of the school, students must develop or organize accurate concepts such as fairness, cheating, taking turns, honesty, friendship, etc. A review of the literature (Parrill-Burnstein, 1981) suggests that learning disabled students' difficulty with concept learning problems could be traced to selective attention difficulties and deficient or inactive problem-solving skills.

Memory-- Encoding, storage, and retrieval are three frequently identified components of memory (Parrill-Burnstein, 1981). Each component is dependent upon effective problem-solving, selective attention, and concept organization skills. Encoding is the acquisition of information and involves the

meaningful organization of information for storage. Storage refers to the length of time that information is aviailable (short and long term memory). Problem-solving, attention, and concept organization skills allow one to store information more efficiently, making it available for long term memory. If new material to be stored in memory can be associated with or filed with information already in long term memory, then it will more likely be recalled at a latter time than if simply stored in isolation. Deciding how or where to store new information for later recall requires problem-solving and information processing skills.

Recall or retrieval of information from memory can be facilitated by 1) recognition (when presented with other material as in a multiple choice question), 2) cueing-- associating material to be recalled with other material or by presenting part of the material (i.e., "It begins with the letter "S"), and 3) free recall. The retrieval of stored information requires problem-solving skills. Think of the last time you could not recall an important fact or someone's name. Did you just sit there and wait for the desired information to just come to you or did you try different approaches to jog your memory and recall the material? How one decides to retrieve the desired information reflects and involves the use of problem-solving skills. Some

learning disabled students have been found to experience difficulties in one or more areas of memory (Parrill-Bernstein, 1981).

Language-- Language acquisition is a problem-solving activity that requires various information processing skills (Parrill-Bernstein, 1981; Wiig, 1985). For example, children differentiate linguistic regularities and then formulate hypotheses based on that differentiation, test the hypotheses by applying it, and then evaluate their hypotheses using the responses of others to their language. Selective attention, concept organization, and memory skills also contribute to language development.

The various aspects of language include phonology (the actual speech sounds), syntax (the relationship of words within a sentence), semantics (the acquisition of word meaning), and pragmatics (the use of language in different social contexts). Semantics and pragmatics are of particular interest when working with the behaviorally disordered. Often the language of these students is inappropriate, especially within the social context it occurs, and this leads to social and behavioral problems.

Cognitive Mapping-- Cognitive mapping can be defined as making mental pictures of our environment, as developing orienting schema, and as creating spatial

images organized into environmental strategies. Cognitive mapping includes 1) motor proficiency-- the ability to move through space, 2) revisualization-- the ability to represent mentally visual stimuli when removed from sight, 3) mental rotations-- imagined movements of objects, and 4) perspective taking-- imagining that an object has been moved to another position and then picturing the new perspective or view of that object (Parrill-Bernstein, 1981).

Of particular revelance to the study of behavioral disorders is Kaplan's (1973) suggestion that cognitive mapping skills enable us to make decisions that facilitate adaptation to our environment. Cognitive mapping skills assume adequate problem-solving skills, motor movement, selective attention, and memory. Adequate language skills also enhance cognitive mapping efficiency (Parrill-Bernstein, 1981).

Social Cognition-- Social cognition is a problem-solving activity that presupposes effective problem-solving skills and intact processing of the other information processing skills (all of the skills below social cognition in Figure 1). Social cues provide information about another individual's feelings, beliefs, and attitudes (Flavell, 1977), and how these cues are accumulated, related, integrated, and acted upon is social cognition. One's social cognition is

reflected in his/her observable behavior which can be refered to as social competence. Social competence, the ability to interact appropriately with others and interpret the behavior of others accurately, can be seen as a critical component of sucessful social-emotional adjustment.

Three skills basic to social competence are role taking, person perception, and perspective taking. Role taking is the ability to understand the social positions of others, person perception is the ability to identify and process relevant cues about another, and perspective taking is the ability to identify the attitudes, beliefs, or feelings of another or to emphasize. All three are necessary skills for successful social adjustment. Without them one could be perceived as having social/emotional problems and labeled as such.

Implications for Assessment and Intervention

Models of exceptionality identified in the introduction of this article provide a framework for studying exceptional behavior and for developing intervention techniques. Those working with behaviorally disordered children and youth frequently utilize these models as a framework for planning assessment and remediation strategies. In light of current research, Parrill-Burnstein's Hypothesis

Testing Theory and Information Processing Model provide an additional framework for assessing important skills and for planning interventions based upon those results.

If, as Parrill-Burnstein models suggest, effective social cognition is dependent upon all of the other skills in Figure 1, then students with behavioral disorders would be expected to be deficient in one or more skill areas. Assessment of these skills could provide needed diagnostic information for successful social skills programming. Weak areas could then be identified and targeted for remediation.

Assessment tools are needed for each of the problem-solving and information processing skills in Figure 1 if one is to apply the Parrill-Burnstein model to programming for exceptional students. Currently there are experimental instruments available to assess these skills (Parrill-Burnstein, 1981), and standardized instruments to assess attention, memory, and language skills based upon the problem-solving and information processing model presented here have been developed (Bloomer, 1978; Wiig, 1985).

Intervention programs for the behaviorally disordered would be based upon assessment of the problem-solving and information processing skills in Figure 1. Deficient skill areas toward the bottom of

the pyramid in Fiqure 1 would receive first attention. Techniques for improving the information processing skills would include the utilization of problem-solving skills as well as other information processing skills below the targeted skill in Figure 1. Intervention programs based on this Information Processing model are available for certain skills (Norlander, Bloomer, Hall, & Lehmann, 1988). Bloomer and asssociates have developed remediation strategies to improve attention and memory skills, trained educators in their use, and reported improved achievement for learning disabled students (Norlander et al., 1988).

The Parrill-Bernstein models might also provide implications for a perennial problem encountered in the education of students with behavioral disorders-- the generalization and transfer of newly acquired social skills to new environments. Recently there has been a proliferation of procedures to identify and remediate social skills deficits among children with behavioral disorders (McConnell, 1987). The focus of many current programs to teach social skills has been to deliver direct instruction of social skills and to implement behavior change programs to decrease or eliminate inappropriate behaviors. A significant limitation of these approaches has been the students' inability to generalize or transfer social skills acquired in the

special education setting to other environemnts (Shores, 1987). The Parrill-Bernstein Hypothesis Testing Theory and Information Processing Model imply that the development of all of the skills in Figure 1 must be addressed before social skills (social cognition) can be learned effectively. These models present a hierarchial sequence of the skills that could be considered for inclusion in a social skills training program. Perhaps the failure of students with behavioral disorders to generalize or transfer their newly learned social skills to other environments is due to inadequate problem-solving and information processing skills.

In the field of learning disabilities, researchers are exploring the use information processing models to explain the difficulties experienced by many students with the hope that these models, if validated, can provide a framework for the development of assessment and remediation techniques. Although promising information processing research has been reported (Swanson, 1988a), further study is clearly indicated (Swanson, 1988b). Perhaps the field of behavioral disorders can also benefit from this research.

Conclusions

Poor social and problem-solving skills have frequently been attributed to behaviorally disordered students (Johnson, Simon, & Zemitzsch, 1983; Kauffman, 1985; Kneedler, 1980; Simpson, 1987), and there is reason to believe that students with poor social skills would benefit from improved problem-solving skills (Koenings & Oppenheimer, 1985; McEvoy & Odom, 1987; Parrill-Burnstein, 1981; Ridley & Vaughn, 1982; Spivack, Platt, & Shure, 1974; Vaughn, Ridley, & Bullock, 1984). Therefore, theoretical models that address both problem-solving and social skills could be of use to professionals working with the behaviorally disordered. Parrill-Burnstein's Hypothesis Testing Theory and Information Processing Model do this. The Parrill-Bernstein models (see Figure 1), with a problem-solving component, have programmatic implications that could enable students to operate more independently and utlize their social skills in multiple environments. Further, the ability to generate solutions to their own problems will enable students to adapt to and cope more successfully with everyday life.

If future research were to validate these models/ theories and they were used, along with other models of exceptionality, to explain or study behavior, they could

prove to be another useful tool to assist continuing efforts to improve our understanding of and services to children and youth with behavioral disorders.

References

Bryan, T., & Bryan, J. (1986). Understanding learning disabilities (3rd ed.). Palo Alto: Mayfield.

Bloomer, R. H. (1978). Bloomer Learning Test. Livonia, NY: Brador Publications.

Flavell, J. H. (1977). Cognitive development. New Jersey: Prentice-Hall.

Fox, J., & Savelle, S. (1987). Social interaction research and families of behaviorally disordered children: A critical review and forward look. Behavioral Disorders, 12, 276-291.

Frederiksen, N. (1984). Implications of cognitive theory for instruction in problem solving? Review of Educational Research, 54, 363-407.

Gaston, E., Flores-de-Apodaca, R., Rains, M., Weissberg, R. & Cowen, E. (1978). Promoting peer related social competence in school. In M. Kent & J. Roff (Eds.), The primary prevention of psychopathology (Vol. 3). Hanover, N. H.: University Press of New England.

Gerber, M. M. (1983). Learning disabilities and cognitive strategies: a case for training or constraining problem solving? Journal of Learning Disabilities, 16, 255-260.

Gerber, M. M., & Hall, R. J. (1987). Information processing approaches to studying spelling

deficiencies. Journal of Learning Disabilities, 20, 34-42.

Higgins, J. P.,& Theis, A. P. (1981). Problem solving and social position among emotionally disturbed boys. American Journal of Orthopsychiatry, 5, 356-358.

Johnston, J., Simon, D., & Zemitzsch, A. (1983). Balancing an educational mobile through problem-solving conferences. The Pointer, 27, 33-36.

Kaplan, S. (1973). Cognitive maps in perception and thought. In R. M. Downs & D. Stea, Image and environment: Cognitive mapping and spatial behavior. Chicago: Aldine.

Kauffman, J. M. (1985). Characteristics of children's behavior disorders (3rd ed.). Columbus, OH: Merrill.

Kauffman, J. M. (1979). An historical perspective on disordered behavior and an alternative conceptualization of exceptionality. In F. H. Wood & K. C. Lakin (Eds.), Disturbing, Disordered or Disturbed? Minneapolis: Department of Psychoeducational Studies, University of Minnesota.

Kauffman, J. M., Cullinan, D., & Epstein, M. H. (1987). Characteristics of Students Placed in Special Programs for the Seriously Emotionally Disturbed. Behavioral Disorders, 12, 175-184.

Kneedler, R. D. (1980). The use of cognitive training to change social behaviors. Exceptional Education

Quarterly, 1, 65-73.

Koenings, A., & Oppenheimer, L. (1985). Developmental and training of role-taking abilities with emotionally disturbed preschoolers: A pilot study. Journal of Applied Developmental Psychology, 6, 313-320.

Kolligian, Jr., J., & Steinberg, R. J. (1987). Intelligence, information processing, and specific learning disabilities: A triarchic synthesis. Journal of Learning Disabilities, 20, 8-17.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. Cognitive Psychology, 6, 293-323.

McConnell (1987). Entrapment effects and the generalization and maintenance of social skills training for elementary school students with behavioral disorders, Behavioral Disorders, 12, 252-263.

McDowell, R. L., Adamson, G. W., & Wood, F. H. (1982). Teaching emotionally disturbed children. Boston: Little, Brown.

McEvoy, M.A. & Odom, S. L. (1987). Social interaction training for preschool children with behavioral disorders. Behavioral Disorders, 12, 242-251.

Norlander, K. A., Bloomer, R., Hall, D., & Lehmann, F. (1988). Intelligence and Learning: Are they

related? Presentation at the International Conference on Learning Disabilities, Louisville, KY.

Parrill-Bernstein, M. (1981). Problem Solving and Learning Disabilities. New York: Grune & Stratton.

Parrill-Bernstein, M. (1978). Teaching kindergarten children to solve problems: An information processing approach. Child Development, 49, 700-706.

Pellegrino, J. W. & Goldman, S. R. (1987). Information processing and elementary mathematics. Journal of Learning Disabilities, 20, 23-32.

Rhodes, W. C., & Tracy, M. L. (1974). A study of child variance (Vol. 1). Ann Arbor, MI: University of Michigan Press.

Ridley, C. A., & Vaughn, S. R. (1982). The effects of a preschool problem-solving program on interpersonal behavior. Journal of Applied Developmental Psychology, 3, 177-180.

Samuels, S. J. (1987). Information processing abilities and reading. Journal of Learning Disabilities, 20, 18-22.

Shores, R. E. (1987). Overview of research on social interaction: A historical and personal perspective, Behavioral Disorders, 12, 233-241.

Simpson, R. L. (1987). Social interactions of behaviorally disordered children and youth: Where are we and where do we need to go? Behavioral Disorders,

12, 292-298.

Spivack, G., Platt, J. J., & Shure, M. B. (1976). The problem-solving approach to adjustment. San Francisco: Jossey-Bass.

Spivack, G., & Shure, M. B. (1974). Social adjustment of young children: A cognitive approach to solving real live problems. San Francisco: Jossey-Bass.

Sternberg, R. J. (1985). Beyond I.Q.: A triarchic theory of human intelligence. New York: Cambridge University Press.

Swanson, H. L. (1982). A multidimensional model for assessing learning-disabled students' intelligence: An information processing frame-work. Learning Disabilities Quarterly, 5, 312-326.

Swanson, H. L. (1987a). Information processing theory and learning disabilities: An overview. Journal of Learning Disabilities, 20, 3-7.

Swanson, H. L. (1987b). Information processing theory and learning disabilities: A commentary and future perspective. Journal of Learning Disabilities, 20, 155-165.

Vaughn, S. R. & ridley, C. A., (1983). A preschool interpersonal problem-solving program: Does it affect behavior in the classroom? Child Study Journal, 13, 1-12.

Vaughn, S. R., Ridley, C. A., & Bullock, D. D. (1984). Interpersonal problem-solving skills training with aggressive young children. Journal of Applied Developmental Psychology, 5, 213-223.

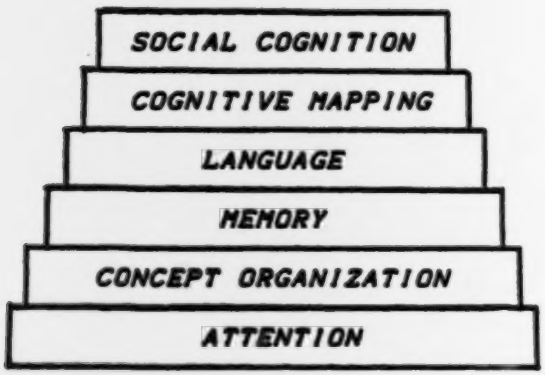
Wood, M. M. (1986). Developmental therapy in the classroom (2nd ed.). Austin, TX: PRO-ED.

Wiig, E. H. (1985). Semantic-Syntactic-Pragmatic Strategy Assessment and Training for Learning Disabled Adolescents. Presentation at the International Conference on Learning Disabilities, New Orleans.

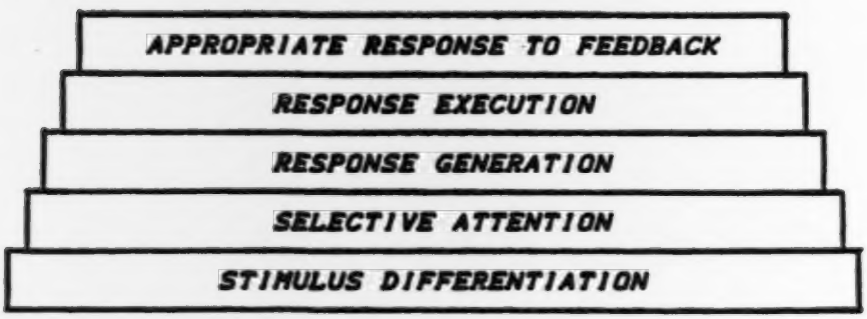
FIGURE 1

INFORMATION PROCESSING THEORY

Information Processes Involved in
PROBLEM SOLVING



PROBLEM SOLVING ACTIVITIES
Hypothesis Testing Theory



(Parrill-Burnstein, 1981)